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AMENDMENTS TO THE CLAIMS

1 – 9 Cancelled

10. [Currently Amended] A method for separating compounds comprising the steps of:

contacting a mixture comprising cell lysate or enzyme and a ~~DNA or RNA~~ target polynucleotide ~~compound~~ which includes at least four non-shielded purine or pyrimidine moieties, and other compounds, with a solid composition including immobilized metal ions capable of binding compounds containing a non-shielded purine or pyrimidine moiety, to form a liquid product containing a reduced amount of the ~~DNA or RNA compound~~ target polynucleotide ~~which includes at least four a non-shielded purine or pyrimidine moieties~~; and exposing the solid composition to an elutant which selectively elutes the polynucleotide target compound; and collecting the target compound substantially free of protein.

11. [Currently Amended] The method of claim 10, further comprising the step of: separating a ~~the~~ supernatant liquid from the solid composition.

12. [Currently Amended] A method for separating compounds comprising the steps of:

passing a mixture of compounds including target polynucleotides ~~DNA and/or RNA compounds,~~ comprising at least four non-shielded purine moieties, at least four non-shielded pyrimidine moieties or mixture thereof, through a column comprising ~~including~~ an IMAC ligand, wherein ~~where~~ the ligand is capable of differentially binding the polynucleotides ~~compounds~~; and

eluting and collecting purified samples of the target polynucleotides ~~DNA and/or RNA compounds~~.

13. [Currently Amended] The method of claim 12, further comprising the step of: detecting each polynucleotide ~~compound~~ in an effluent from the column as a function of time from at least one detectable property associated with each compound; and determining the identity of each compound from the detected properties.

14. [Cancelled]

15. [Cancelled]

16. [Previously Presented] A method for purifying a lysate or enzyme product comprising a crude DNA or RNA target compound containing a at least four non-shielded purine and/or pyrimidine base moieties, said method comprising the steps of:

forming a crude mixture comprising a target compound and contaminants; contacting the crude mixture with an agent including an IMAC ligand capable of binding to the target compound to form an IMAC ligand complex;

separating the complex from the contaminants; and

recovering the target compound from the complex.

[Claims 17-21 were provisionally withdrawn and cancelled to avoid excess fees:]

Claims 17-21: Cancelled

22. [Previously Presented] A method according to Claim 35 further comprising the steps of:

separating the supernatant liquid from the solid composition; or further comprising the steps of:

separating the supernatant liquid from the solid composition and

eluting the compounds including a non-shielded purine or pyrimidine moiety from the solid composition.

23. [Currently Amended] A method for separating compounds comprising the step of:

contacting a mixture comprising cell lysate or enzyme and a target polynucleotide ~~compound~~ including ~~DNA, RNA, or both DNA and RNA~~, a non-shielded purine or pyrimidine moiety and a compound including a shielded purine or pyrimidine moiety with a solid composition including immobilized metal ions capable of binding compounds containing a non-shielded purine or pyrimidine moiety to form a supernatant liquid having a reduced amount of compounds including a non-shielded purine or pyrimidine moiety;

wherein the compound including a non-shielded purine or pyrimidine moiety comprises a single stranded nucleic acid oligomer, or a single stranded nucleic ~~aid~~ acid polymer and the compounds including a shielded purine or pyrimidine moiety comprise double stranded nucleic acid oligomers or double stranded nucleic acid polymers;

wherein the supernatant liquid ~~comprises compounds including DNA and/or RNA, and~~ contains less than or equal to 5% by weight compounds comprising a non-shielded purine or pyrimidine moiety.

24. [Previously Presented] A method of Claim 22 wherein the supernatant liquid comprises compounds including a shielded purine or pyrimidine moiety having less than or equal to 1% by weight of compounds which include a non-shielded purine or pyrimidine moiety.

25. [Previously Presented] A method of Claim 22 wherein the supernatant liquid comprises compounds including a shielded purine or pyrimidine moiety having less than

or equal to 0.01% by weight compounds which include a non-shielded purine or pyrimidine moiety.

[Claims 26-28 were provisionally withdrawn and cancelled to avoid excess fees:]

26 - 28. Cancelled

29. [Previously Presented] A method of Claim 23 wherein the mixture ~~of~~ comprises poly(A) tailed mRNA sequences and other mRNA sequences from eukaryotic cells, the poly(a) mRNA sequences elute after the other mRNA sequences; or wherein the mixture of compounds comprises denatured nucleic acid sequences, wherein sequences having A- rich regions elute after sequences having T- rich regions; so that complementary strands can be resolved.

30. [Previously Presented] A method of Claim 23 wherein the solution ~~of~~ comprises denatured nucleic acid sequences, wherein sequences having C rich regions elute after sequences having G-rich regions so that complementary strands can be resolved; or wherein the mixture of compounds comprises denatured or partially denatured nucleic acid sequences having A-C, A-G, A-C-G, T-G, T-C and or T-G-C rich regions wherein the sequences having the A-C, A-G, and/or A-C-G rich regions elute after their complementary sequences having T-G, T-C and or T-G-C rich regions resulting in a resolution of complementary sequences.

31. [Cancelled]

32. [Currently Amended] A method for purifying a crude target compound containing a non-shielded purine and/or pyrimidine moiety from a mixture comprising cell lysate or enzyme and a DNA or RNA compound, which comprise compounds with at least four non-shielded purine and/or pyrimidine moieties, comprising the steps of:

forming a crude mixture comprising a target compound and contaminants;

contacting the crude mixture with an agent including an IMAC ligand capable of binding to the target compound to form an IMAC ligand complex;

separating the complex from the contaminants; and

recovering the target compound from the complex substantially free of amino acids.

33. [Cancelled]

34. [Previously Presented] The method of claim 10 wherein the target compound containing at least four non-shielded purine or pyrimidine moieties, is selected from the group consisting of single-stranded DNA, partially single-stranded DNA, denatured DNA, fragmented DNA or RNA, plasmid DNA containing single-stranded regions, incomplete or imperfect PCR products, chain-terminated polymerase products, restriction endonuclease-digested DNA, single-stranded PNA, single-stranded primer, single stranded RNA, polyA mRNA and messenger RNA, and is removed from compounds that do not contain a non-shielded purine or pyrimidine moiety.

35. [Previously Presented] A method for separating compounds comprising the step of: contacting a mixture comprising cell lysate or enzyme comprising double-stranded DNA and additionally comprising RNA and/or DNA, which contains single-stranded portions having a non-shielded purine or pyrimidine moiety, with a solid composition comprising immobilized metal ions capable of binding compounds having a non-shielded purine or pyrimidine moiety, to form a supernatant liquid having a reduced amount of RNA and/or DNA having single-stranded portions.

36. [Currently Amended] A method for separating compounds comprising the steps of:

passing a solution comprising

at least one polynucleotide ~~RNA or DNA compound~~, the polynucleotide ~~RNA or DNA compound~~ containing single-stranded portions having at least four non-shielded purine or pyrimidine moieties through a column including an IMAC ligand,
where the ligand is capable of differentially binding the polynucleotide ~~DNA and/or RNA compounds~~;
and collecting purified samples of each polynucleotide ~~DNA and/or RNA~~ compound.

37. [Currently Amended] The method of claim 36, further comprising the ~~step~~ steps of:
detecting each compound in an effluent from the column as a function of time from at least one detectable property associated with each compound; and
determining the identity of each compound from the detected properties.

38. [Previously Presented] A method according to Claim 34 wherein the target compound is separated from a compound selected from the group consisting of genomic DNA, double-stranded plasmid DNA, double-stranded PCR product, double-stranded hybrid and double-stranded PNA.

39. [Previously Presented] The method of claim 36, further comprising the step of:
detecting each compound in an effluent from the column as a function of time from at least one detectable property associated with each compound.

40. [Previously Presented] The method of Claim 32 wherein the contacting of the crude mixture with the agent including an IMAC ligand capable of binding to the target compound to form an IMAC ligand complex ~~in~~ is performed in batch mode.

41. [Previously Presented] The method of Claim 32 wherein the target compound comprises RNA having at least four non-shielded purine and/or pyrimidine moieties and is separated from a lysate containing double-stranded DNA.

42. [Previously Presented] The method of Claim 32 wherein the target compound recovered from the complex is present in the original mixture at a concentration of less than 1 micromolar.

43. [Previously Presented] The method of Claim 32 wherein the contacting of the crude mixture with the agent including an IMAC ligand capable of binding to the target compound to form an IMAC ligand complex in performed in batch mode, and the target compound recovered from the complex is present in the original mixture at a concentration of less than 1 micromolar.

44. [Previously Presented] The method of Claim 10 wherein the solid composition comprises a ligand selected from the group consisting of iminodiacetic acid (IDA), nitrilotriacetic acid (NTA), pentadentate chelator (PDC), tris-(2-ethylaminoethyl) amine (TREN), dipicolyl amine (DPA) and chelating lipids.

45. [New] A method of Claim 10 for separating compounds comprising the steps of:

contacting a mixture comprising cell lysate or enzyme and a DNA target compound which includes at least four non-shielded purine or pyrimidine moieties, and other compounds, with a solid composition including immobilized metal ions capable of binding compounds containing a non-shielded purine or pyrimidine moiety, to form a liquid product containing a reduced amount of the DNA target compound which includes at least four ~~a~~ non-shielded purine or pyrimidine moieties; and collecting the DNA target compound substantially free of protein.

46. [New] A method of Claim 10 for separating compounds comprising the steps of:

contacting a mixture comprising cell lysate or enzyme and an RNA target compound which includes at least four non-shielded purine or pyrimidine moieties, and

other compounds, with a solid composition including immobilized metal ions capable of binding compounds containing a non-shielded purine or pyrimidine moiety, to form a liquid product containing a reduced amount of the RNA compound which includes at least four a non-shielded purine or pyrimidine moieties; and collecting the target compound substantially free of protein.

47. [New] A method of Claim 10 for separating compounds comprising the steps of:

contacting a mixture comprising cell lysate or enzyme and an RNA target compound which includes at least four non-shielded purine or pyrimidine moieties, and other compounds, with a solid composition including immobilized metal ions capable of binding compounds containing a non-shielded purine or pyrimidine moiety, to form a liquid product containing a reduced amount of the RNA target compound which includes at least four a non-shielded purine or pyrimidine moieties; eluting the RNA target compound from the solid; and collecting the target compound substantially free of protein.

48. [New] A method according to Claim 12 for separating compounds comprising the steps of:

passing a mixture of compounds including target polynucleotides comprising at least four non-shielded purine moieties, at least four non-shielded pyrimidine moieties or mixture thereof through a column including an IMAC ligand, where the ligand is capable of differentially binding the compounds; and collecting purified samples of the target polynucleotides.

49. [New] A method of Claim 10 wherein the target polynucleotide comprises single-stranded DNA, mRNA, miRNA, or denatured genomic DNA, and the other compounds comprise genomic DNA, plasmid DNA or PCR product DNA.